

Fatty Liver Disease

What is a fatty liver?

A fatty liver is the result of the accumulation of excess fat in liver cells. Fatty tissue slowly builds up in the liver when a person's diet exceeds the amount of fat his or her body can handle. A person has a fatty liver when fat makes up at least 5-10% of the liver. Simple fatty liver can be a completely benign condition and usually does not lead to liver damage. However, once there is a buildup of simple fat, the liver becomes vulnerable to further injury, which may result in inflammation and scarring of the liver.

What causes fatty liver disease?

The most common cause of fatty liver disease in Canada is obesity. Whereas several decades ago obesity was not very common, according to current statistics more than 50% of Canadians are overweight. It is estimated that 75% of obese individuals are at risk of developing a simple fatty liver. Up to 23% of obese individuals are at risk of developing fatty liver with inflammation.

Besides obesity, nutritional causes of fatty liver disease are:

- Starvation and protein malnutrition
- Long term use of total parenteral nutrition (a feeding procedure that involves infusing nutrients directly into the blood stream)
- intestinal bypass surgery for obesity
- rapid weight loss

Certain conditions often accompany and may contribute to fatty liver disease:

- diabetes mellitus
- hyperlipidemia (elevated lipids in the blood)
- insulin resistance and high blood pressure

Other causes include:

- genetic factors
- drugs and chemicals such as alcohol, corticosteroids, tetracycline and carbon tetrachloride.

How do we define “Overweight” and “Obese”?

Although many people feel they could lose some weight, few would consider themselves obese. A widely-used measure to define “overweight” and “obese” is the Body Mass Index (BMI). A BMI is a calculation based on your height and weight that gives a number that reflects either a healthy or unhealthy weight. A BMI of 18 – 25 is within the healthy range for most people, 25 – 30 is classified as overweight, and over 30 is obese. Different ethnic groups may differ slightly – for example, in Asian populations the healthy BMI is lower, ranging from 18 -23.



Canadian Liver Foundation
Fondation canadienne du foie

Bringing liver research to life
Donner vie à la recherche sur le foie

Does the size of your waist matter?

Excess abdominal fat is associated with fatty liver disease and other health risks such as diabetes. Waist measurements – which differ according to gender – are used to identify the health risks associated with excess abdominal fat: For men, health risks increase if your waist circumference is more than 102 cm (40 in.). For women, the risks increase if your waist circumference is more than 88 cm (35 in.).

What is my BMI?

You can use the following formula to calculate your BMI:

$$\text{BMI} = \frac{\text{weight in kilograms}}{(\text{height in metres})^2}$$

Example: for someone who is 1.70 metres tall who weighs 80 kilograms:

$$\text{BMI} = \frac{80}{1.70 \times 1.70} = 27.7$$

How does fat get into the liver?

Fat from a person's diet is usually metabolized by the liver and other tissues. If the amount of fat exceeds what is required by the body, fat is stored in the fatty tissue. Other reasons for accumulation of fat in the liver could be the transfer of fat from other parts of the body or the inability of the liver to change it into a form that can be eliminated.

What is NASH?

NASH represents the more severe end of the spectrum of non-alcoholic fatty liver disease. NASH stands for NonAlcoholic SteatoHepatitis. Steatohepatitis means fatty liver with inflammation, in other words, ongoing damage similar to alcoholic liver disease, but in this case it occurs in people who do not drink alcohol or drink minimally.

NASH differs from the simple accumulation of fat in the liver, which is a completely benign condition. Up to 20% of adults with NASH develop cirrhosis and up to 11% may experience liver-related deaths. Many individuals develop chronic liver failure and require liver transplantation. The prevalence of NASH is 2-6% in the general population.



Canadian Liver Foundation
Fondation canadienne du foie

Bringing liver research to life
Donner vie à la recherche sur le foie

Can children develop fatty liver disease?

Fatty liver disease is now becoming evident in children, due in large part to an alarming increase in childhood obesity. It is estimated that one in 10 Canadian children is overweight – a number that has almost tripled in the last decade. Fatty liver disease affects almost 3% of children and 22 – 53% of obese children. Fatty liver disease can be found in children as young as four years of age.

What are the symptoms of fatty liver disease?

In general, people with fatty liver disease have no symptoms. However, some people report discomfort in the abdomen at the level of the liver, fatigue, a general feeling of being unwell and vague discomfort.

How is fatty liver disease diagnosed?

Fatty liver disease is usually suspected in patients who have an enlarged liver or abnormal liver tests. An ultrasound of the liver can suggest the presence of a fatty liver. In some cases, your doctor may advise a liver biopsy, a procedure where the physician inserts a needle into the liver and extracts a sample tissue, which is then examined under a microscope.

How is fatty liver disease treated?

The treatment of fatty liver disease is related to the cause. At this time, it is not possible to predict which patients will develop NASH. Once there is a buildup of simple fat however, the liver becomes vulnerable to further injury, which may result in liver inflammation and scarring (NASH).

Patients who are obese are advised to achieve a gradual and sustained weight loss through proper nutrition and exercise. Patients with diabetes and high lipids in their blood have to improve their sugar control and lower lipids levels. Usually, a low fat, low calorie diet is recommended along with insulin or medications to lower blood sugar in people with diabetes.

For patients with NASH who are not overweight and not diabetic, a low fat diet is often recommended. It is also recommended that people avoid drinking alcohol since it can cause and contribute to fatty liver disease. Patients with fatty liver disease should see their primary healthcare providers on a regular basis.

Currently, there is no medication proven to effectively treat fatty liver disease. Since it is now such a common condition, it has raised a lot of interest in the scientific community. There are now a number of clinical trials looking at various treatments of fatty liver disease.



Canadian Liver Foundation
Fondation canadienne du foie

Bringing liver research to life
Donner vie à la recherche sur le foie

Can fatty liver disease be prevented?

By choosing a healthy life style, you may prevent obesity - the number one reason for fatty liver disease. Please remember that a healthy diet and exercise are important components of any weight-loss regimen. The following are some suggestions for preventing fatty liver disease:

- Choose to lead a healthy lifestyle.
- If you are overweight, strive for a gradual and sustained weight loss.
- Eat a well-balanced diet that is low in saturated fats and high in fibre.
- Introduce exercise into your routine, at least four times a week. You can enjoy walking, swimming, gardening, stretching.
- Avoid alcohol.
- Drink coffee.

Reviewed in 2015.